

Office of the Dean

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Dr. Teresa Wilcox Interim Dean

MEMORANDUM

DATE: January 13, 2021

TO: Bret Danilowicz, Provost

Teresa Wilson Interim Doon

FROM: Teresa Wilcox, Interim Dean

SUBJECT: Emeritus Status for Dr. Paul Yiu, Professor of Mathematics

I forward my strong support for the appointment of Dr. Paul Yiu as Emeritus Faculty in the Department of Mathematical Sciences. He meets or exceeds <u>all requirements</u> outlined in the current FAU Policy on Emeritus Faculty (Revised 2015).

The faculty of the Department of Mathematical Sciences met and voted unanimously for this appointment and the Chair concurred. Dr. Yiu's work has impacted a classical branch of mathematical research and for about two decades, he edited the journal *Forum Geometricorum*, which he published electronically through our department.

In addition, Paul served for over 20 years as director of our Master of Science in Teaching Mathematics, impacting teachers in school districts in FAU's service area.

The Chair wrote "Paul is highly regarded by his students and his colleagues – the unanimous faculty support for this nomination shows the department's high regard for this wonderful colleague and mathematician."

I attach Dr. Yiu's CV as well as a Letter to the Editor in the November 2020 issue of the Notices of the American Mathematical Society demonstrating his substantial contributions to his field of study in mathematics

cc: Stephen Locke

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Curriculum Vita of Paul Y. Yiu

Department of Mathematical Sciences Charles E Schmidt College of Science Florida Atlantic University

December 2018

Academic Degrees

B.A. (Honours), University of Hong Kong, 1975.

M.Phil., University of Hong Kong, 1978.

Ph.D., University of British Columbia, 1985.

Employment

Postdoctoral Fellow, University of British Columbia, 1985 – 1986.

Research Instructor, Ohio State University, 1986 – 1990.

Lecturer, University of Hong Kong, 1988 – 1989.

Assistant Professor, Florida Atlantic University, 1990 – 1993.

Associate Professor, Florida Atlantic University, 1993 – 2000.

Professor, Florida Atlantic University, since 2000.

Research Grants

National Science Foundation DMS8702978, The Hurwitz Problem on Composition of Quadratic Forms, 1987 – 1989; (sole principal investigator).

National Science Foundation DMS8903412, The Hurwitz Problem on Composition of Quadratic Forms and Related Topics, 1989 – 1992; (sole principal investigator).

National Science Foundation DMS9201204, The Hurwitz Problem on Sums of Squares and Related Topics, 1992 – 1994; (sole principal investigator).

Awards

Teaching Incentive Program Award, Florida State System of Universities, 1994.

Award for Excellence in Undergraduate Teaching, Florida Atlantic University, 2000-2001.

Professional Membership

American Mathematical Society, since 1976.

Mathematical Association of America, since 1976.

Fibonacci Association, since 1992.

Graduate Students Supervised

Khalil, S., MSc. 1993 (Fall).

Thesis: The Cayley - Dickson Algebras.

Elpida Thompson, MST 2006 (Summer).

Thesis: Euclid, van Hiele levels, and the Geometer's Sketchpad.

Amy Bell, MST 2006 (Fall).

Thesis: Some construction problems related to the incircle of a triangle.

Jesus Torres, MST 2014 (Spring)

Thesis: The triangle of reflections.

External Examiner of Ph. D. Dissertations

Vladlen Timorin, University of Toronto, Canada, 2004.

Thesis: Rectifiable Families of Conics.

Nguyen Hong Le, University of New South Wales, Australia, 2015.

Thesis: Four-fold symmetry in universal triangle geometry.

Services

Editor-in-chief, Forum Geometricorum, electronic journal on classical euclidean geometry.

Editor, Sangaku Journal.

Internation Journal of Computer Discovered Mathematics.

Reviewer for Mathematical Reviews and Zentrablatt für Mathematik und ihre Grenzgebiete.

Referee for various international mathematical journals.

Coach for FAU undergraduates for the William Lowell Putnam Mathematical Competition 1995–2003.

Organizer of FAU Mathematics Competition.

Director, MST Program in Mathematics, Florida Atlantic University, 1997-.

Master Teacher, Department of Mathematical Sciences, 2008–2009.

Professional Conferences in the past ten years

- 1. A tale of two triangle centers, February 9-10, 2018, MAA Florida Sectional Meeting, Florida Atlantic University, Fort Lauderdale, Florida.
- 2. Heptagonal triangles and their companions, February 13–14, 2009, MAA-Florida Sectional Meeting, Florida Gulf Coast University, Fort Myers, Florida.
- 3. Organizer of Invited Paper Session on Classical Euclidean Geometry, MathFest, Madison, Wisconsin, July 31–August 2, 2008.
- 4. Invited half-hour talk: The circles of Lester, Evans, Parry, and their generalizations, MathFest, Madision, Wisconsin, July 31–August 2, 2008.
- 5. Heron triangles which cannot be decomposed into two integer right triangles, February 15–16, 2008, MAA-Florida Sectional Meeting, Florida Southern College, Lakeland, Florida.
- 6. Triangle Geometry in recent MAA journals and mathematics competitions, Friday, February 17, 2006, MAA-Florida Sectional Meeting, Florida Atlantic University, Jupiter, Florida.

Research Bibliography of Paul Yiu

- 71 (with X.-D. Zhang) Diagram 29 in the appendix of Yōjutsu Shindai, to appear in *Sangaku Journal*.
- **70** (with Sándor Kiss) On the Tucker circles, Forum Geom., 17 (2017) 157–175.
- **69** (with X.-D. Zhang) A most basic triad of parabolas associated with a triangle, Global Journal of Advanced Research for Classical and Modern Geometry, 6 (2017) 45–57.
- **68.** (with T. O. Dao and Q. D. Ngo) Golden sections in an isosceles triangle and its circumcircle, *Global Journal of Advanced Research for Classical and Modern Geometry*, 5 (2016) 93–97.
- **67.** (with D. Paunić) Regular polygons and the golden section, *Forum Geom.*, 16 (2016) 273–281.
- **66.** Lines simultaneously bisecting the perimeter and area of a triangle, Global Journal of Advanced Research for Classical and Modern Geometry, 5 (2016) 7–14.
- **65.** (with F. J. García Capitán) Three mutually tangent congruent circles tangent to the sidelines of a triangle, *International Journal of Geometry*, 5 (2016) 15–18.
- **64.** (with Emmanuel A. J. García) Golden sections of triangle centers in the golden triangles, *Forum Geom.*, 16 (2016) 119–124.
- **63.** Collinearity of the reflections of the intercepts of a line in the angle bisectors of a triangle, *International Journal of Computer Discovered Mathematics*, 0 (2015) 27–31.
- **62.** Iterations of sums of powers of digits, *International Journal of Computer Discovered Mathematics*, 0 (2015) 21–26.
- **61.** The Kariya problem and related constructions, *Forum Geom.*, 15 (2015) 191–201.
- **60.** Three constructions of Archimedean circles in the arbelos, *Forum Geom.*, 14 (2014) 255–260.

- **59.** (with Sándor Kiss) The touchpoints triangles and the Feuerbach hyperbolas, *Forum Geom.*, 14 (2014) 63–86.
- **58.** On the conic through the intercepts of the three lines through the centroid and the intercepts of a given line, *Forum Geom.*, 13 (2013) 87–102.
- **57.** Conic construction of a triangle from its incenter, nine-point center, and a vertex, *Journal for Geometry and Graphics*, 16 (2012) 137–149.
- **56.** Geometry of sum-difference numbers, *College Math. Journal*, 43 (2012) 408–409.
- **55.** Sherman's fourth side of a triangle, Forum Geom., 12 (2012) 219–225.
- **54.** Polygonal triples and the double ruling of a hyperboloid, *International Journal of Mathematical Education in Science and Technology*, 43 (2012) 831–839.
- **53.** (with N. Dergiades) Golden section with a collapsible compass only, *Forum Geom.*, 11 (2011) 255–259.
- **52.** Rational Steiner porism, *Forum Geom.*, 11 (2011) 237–249.
- **51.** The circles of Lester, Evans, Parry, and their generalizations, *Forum Geom.*, 10 (2010) 175–209.
- **50.** (with A. P. Hatzipolakis) Reflections in triangle geometry, *Forum Geom.*, 9 (2009) 301–348.
- **49.** Heptagonal triangles and their companions, *Forum Geom.*, 9 (2009) 125–148.
- **48.** (with S. Gao and K.R.S. Sastry) Heron sequences, *Combinatorial Number Theory*, de Gruyter, 2009, pp. 199–204; also appears in *Integers*, 2009.
- **47.** (with S. M. Lee, H. Sun, W. Wei and Y. Wen) The super edge-gracefulness of two infinite families of trees, *Congressus Numerantium*, 190 (2008) 109–128.
- **46.** Conic construction of a triangle from the feet of its angle bisectors, *Journal for Geometry and Graphics*, 12 (2008) 133–144.

- **45.** Dynamic triangle geometry: families of lines with equal intercepts, *International Journal of Computers for Mathematical Learning*, 13 (2008) 159–170.
- **44.** Conic solution of Euler's triangle determination problem, *Journal for Geometry and Graphics*, 12 (2008) 75–80.
- **43.** (with F. M. van Lamoen), Construction of Malfatti squares, Forum Geom., 8 (2008) 49–59.
- **42.** (with C. Pohoata) On a product of two points induced by their cevian triangles, *Forum Geom.*, 7 (2007) 169–180.
- **41.** Some constructions related to the Kiepert hyperbola, *Forum Geom.*, 6 (2006) 343–357.
- **40.** (with B. Suceavă), The Feuerbach point and Euler lines, *Forum Geom.*, 6 (2006) 191–197.
- **39.** On Emelyanov's circle theorem, Journal for Geometry and Graphics, 9 (2005) 155–167.
- **38.** (with M. Hoffmann) Moving central axonometric reference systems, *Journal for Geometry and Graphics*, 9 (2005) 133–140.
- **37.** Elegant geometric constructions, in N.Y. Wong, C.K. Leung, M.Y. Tang (Eds.), Revisiting Mathematics Education in Hong Kong for the New Millennium. Hong Kong: Hong Kong Association for Mathematics Education, pp.173–203; also in Forum Geom., 5 (2005) 75–96.
- **36.** Generalized Apollonian circles, *Journal for Geometry and Graphics*, 8 (2004) 225–230.
- **35.** (with N. Dergiades) Antiparallels and concurrent Euler lines, *Forum Geom.*, 4 (2004) 1–20.
- **34.** The congruent incircle cevians of a triangle, *Missouri J. Math. Sci.*, 15 (2003) 21–32.
- **33.** (with D. Grinberg) The Apollonius circle as a Tucker circle, *Forum Geom.*, 2 (2002) 175–182.

- **32a.** Over de lijnen van Fermat (Dutch translation by Floor van Lamoen), *Euclides*, 77 (2002) 188–193.
- **32b.** On the Fermat lines, *Forum Geom.*, 3 (2003) 83–91.
- **31.** (with F.M. van Lamoen) The Kiepert pencil of Kiepert hyperbolas, Forum Geom., 1 (2001) 125–132.
- **30.** The volume of an isosceles tetrahedron and the Euler line, *Mathematics and Informatics Quarterly*, 11 (2001) 15–19.
- **29.** (with A.P. Hatzipolakis), Pedal triangles and their shadows, *Forum Geom.*, 1 (2001) 81–90.
- 28. (with A.P. Hatzipolakis) The Lucas circles of a triangle, Amer. Math. Monthly, 108 (2001) 444–446.
- 27. (with A.P. Hatzipolakis, F.M. van Lamoen and Barry Wolk), Concurrency of four Euler lines, *Forum Geom.*, 1 (2001) 59–68.
- **26.** Heronian triangles are lattice triangles, *Amer. Math. Monthly*, 108 (2001) 261–263.
- **25.** The length of $x_1^4 + x_2^4 + x_3^4 + x_4^4$ as a sum of squares, *Journal of Pure and Applied Algebra*, 156 (2001) 367–373.
- **24.** The uses of homogeneous barycentric coordinates in plane euclidean geometry, *Int. J. Math. Educ. Sci. Technol*, 31 (2000) 569–578.
- 23. Mixtilinear incircles, Amer. Math. Monthly, 106 (1999) 952–955.
- **22.** (with C. Dodge, T. Schoch, and P. Woo) Those ubitiquous Archimedean circles, *Math. Mag.*, 72 (1999) 202–213.
- **21.** Construction of indecomposable Heronian triangles, *Rocky Mountain Journal of Mathematics*, 28 (1998) 1189–1202.
- **20.** Isosceles triangles equal in perimeter and area, *Missouri J. Math. Sci.* 10 (1998) 106–111.
- 19. (with S. Kahlil) The Cayley Dickson algebras, A Theorem of Hurwitz, and Quaternions, Bull. Soc. Sci Lettres Lodz, 47 (1997) 117–169.

- **18.** Heronian triangles with associated inradii in arithmetic progression, *Crux Math.* 23 (1997) 146–149.
- 17. Some upper bounds for composition numbers, *Bol. Soc. Mat. Mexicana* (ser. 3) 2 (1996) 65–77.
- **16.** Construction of integer right triangles with consecutive legs in the tradition of Jiuzhang Suanshu, (Chinese) EduMath. no.3, (1996) 26–32.
- **15.** (with J. Eells) Harmonic morphisms between euclidean spheres, *Proc. Amer. Math. Soc.* 123 (1995) 2921–2925.
- 14. (with K. Y. Lam) Beyond the impossibility of a 16-square identity, in K.Y.Chan and M.C.Liu (ed.), Five Decades as Mathematician and Educator, On the 80th Birthday of Professor Y.C.Wong, pp. 137 163, World Scientific, Singapore, 1995.
- 13. Para Euclidean teaching of Euclidean geometry, in M. K. Siu (ed.) Mathematics Education in Hong Kong, Hong Kong University Press, 1995.
- 12. (with T. L. Smith) Construction of sums of squares formulae with integer coefficients, *Bol. Soc. Mat. Mexicana*, (ser. 2) 37 (1992) 479–495.
- **11.** Quadratic forms between euclidean spheres, *Manuscripta Math.*, 83 (1994) 161–171.
- **10.** Composition of sums of squares with integer coefficients, in Lawrynowicz (ed.) *Deformations of Mathematical Structures* II, pp. 7–100, Kluwer, 1994.
- 9. (with J. I. Alarcon) Composition of Hermitian forms, *Linear and Multilinear Algebra*, 36 (1993) 141–145.
- 8. (with K. Y. Lam) Linear spaces of real matrices of constant rank, *Linear Algebra and its Application*, 195 (1993) 69–79.
- 7. Maximal normal sets of n-planes in \mathbb{R}^{2n} , Linear Algebra and its Applications, 181 (1993) 241 249.
- **6.** On the product of two sums of 16 squares as a sums of squares of integral bilinear forms, *Quart. J. Math. Oxford*, 41 (1990), 463–500.

- **5.** Strongly regular graphs and Hurwitz-Radon numbers, *Graphs and Combinatorics*, 6 (1990), 61–69.
- **4.** (with K. Y. Lam) Geometry of normed bilinear maps and the 16-square problem, *Math. Ann.*, 284 (1989), 434–447.
- **3.** (with K. Y. Lam) Sums of squares formulae near the Hurwitz-Radon range, *Contemp. Math.* vol. 58, part II (1987), 51–56.
- 2. Sums of squares formulae with integer coefficients, Canad. Math. Bull. 30 (1987), 318–324.
- 1. Quadratic forms between spheres and the non-existence of sums of squares formulae, *Math. Proc. Camb. Phil. Soc.* 100 (1986), 493–504.

Long Project in Progress

- 1. Geometry of the Triangle.
- **2.** A Critical Commentary on *Jiuzhang Suanshu* (The Nine Chapters of the Mathematical Art).

Unpublished Papers

- 1. Chinese extraction of cube roots, 5 postings on the Math-History-List, MAA, December, 1996.
- 2. Integer right triangles in the premodern Chinese tradition, 28th Annual Meeting of the Florida Section of MAA, February 27-28, 1997, Tallahassee.
- 3. Geometric Art Design, Advanced Euclidean Geometry via the Geometer's Sketchpad, Florida Higher Education Consortium 7th Statewide Conference on Enhancing Teaching and Learning in Mathematics & Science, Pompano Beach, November 1998.
- **4.** Archimedean circles in the Shoemaker's knife, 31st Annual Meeting of Florida Section of MAA, Boca Raton, Florida, March 6 7, 1998.

Selected Unpublished Lecture Notes for courses taught at Florida Atlantic University

- 1. Script for MHF 6410 Calculus from a Historical Perspective, 419 pages, 2018; MHF6410_2018_Script.pdf
- 2. Script for MAT 6516 Problem Solving and Recreational Mathematics, 310 pages, 2018; MAT6516_2018_Script.pdf
- 3. Number Theory and Cryptography, 183 pages, Fall 2017.
- 4. Calculus from a Historical Perspective, 142 pages, Fall 2015.
- **5.** Mathematical Problem Solving and Recreational Mathematics, Summer, 2015.
- 6. MST Number Theory and Cryptography, 146 pages, Fall 2014.
- 7. Advanced Algebra and Geometry, 125 pages, Fall 2013.
- 8. Linear Algebra, Fall, 2011.
- 9. Advanced Euclidean Geometry, 203 pages, Summer 2010.
- 10. Algebraic Topology, 152 pages, Spring 2010.
- 11. Topics in History of Mathematics, Euclid's Elements, The Nine Chapters, and Archimedes, 159 pages, Summer 2008.
- **12.** Introduction to the Geometry of the Triangle, Summer 2001; revised December, 2012, 151+viii pages.
- **13.** The Elementary Mathematical Works of Leonhard Euler, 136 + xxiii pages, Summer 1999.
- 14. Euclidean Geometry, 170 pages, Summer, 1998.
- 15. Notes on Elementary Number Theory, 130 pages, Fall, 1994.

Regular contributions to Problem Solving journals

- 1. Geometric Constructions, I–IV, Mathematics and Informatics Quarterly, 11 (2001) 28, 87 88, 149 150, 192 193.
- 2. Different Perspectives, $Mathematics\ and\ Informatics\ Quarterly,\ 11\ (2001)\ 81–82.$
- 3. Geometric Constructions, V–VII, Mathematics and Informatics Quarterly, 12 (2002) number 1, 16–17, 62–63, xx–xx.

Courses taught in the past five years

Fall 2018	MST Calculus from a Historical Perspective (on line)
Summer 2018	MST Problem Solving and Recreational Mathematics (on line)
Spring 2018	Calculus and Analytic Geometry 2
Spring 2010	Engineering Mathematics 1
E-11 2017	<u> </u>
Fall 2017	Calculus and Analytic Geometry 1
	Number Theory and Cryptography
Summer 2017	MST Topics in History of Mathematics
Spring 2017	Introductory Number Theory
	Calculus and Analytic Geometry 2
Fall 2016	MST Advanced Algebra and Geometry
	Calculus and Analytic Geometry 1
Summer 2016	MST Advanced Euclidean Geometry
Fall 2015	Modern Algebra
	MST Calculus from a Historical Perspective
Summer 2015	MST Problem Solving and Recreational Mathematics
Spring 2015	Calculus and Analytic Geometry 3
	Engineering Mathematics 2
Fall 2014	Survey of Geometry
	MST Number Theory and Cryptography
Summer 2014	Survey of Geometry
	MST Topics in History of Mathematics
Spring 2014	Engineering Mathematics 1
	History of Mathematics

LETTERSTOTHE EDITOR



Letter to the Editor

On July 3, 2020, Dr. Paul Yiu, the Editor-in-Chief and founder of the online journal Forum Geometricorum (forumgeom.fau.edu/), sent out a public message to the editors and authors of articles published in this journal. He mentioned that due to a health challenge he retired from his position with Florida Atlantic University in December 2019 and that the publication of new papers in Forum Geometricorum ceased with the 2019 volume. With its two decades of existence, Forum Geometricorum (2000-2019) represents a highly successful and interesting editorial and academic experience of major importance for the heritage of advanced Euclidean geometry. This journal addressed the need for high quality information in an area closely related to high-school geometry. Dr. Paul Yiu is a highly knowledgeable scholar, whose work is of the highest quality in terms of academic standards, editorial vision and highest care for the published mathematical content. He is a man of superb generosity, who never hesitated to work tirelessly on behalf of the mathematical community. Forum Geometricorum is his gift to us all.

> —Bogdan D. Suceavă Professor of Mathematics California State University, Fullerton

To the Editors

I am writing a biography of the Austro-American mathematician Olga Taussky-Todd (1906–1995) and would be glad to hear from any of her former students, colleagues, or friends, or anyone with reminiscences or with whom she corresponded.

Thank you for your consideration.

—Judith Goodstein irg@caltech.edu

Dodging a Bullet

In this letter I give an inside look at a cancelled meeting of the AMS. Someday, when one looks back at mathematics in this unusual period in history, it may be useful to have a few contemporaneous first-hand accounts. I was the local organizer of the Sectional Meeting of the AMS at Tufts University scheduled for March 21–22, 2020. The impetus for this meeting, at least for my department, was to showcase the university and the Department of Mathematics, for although we have made great strides in the last thirty years, Tufts is still not widely known. I must have put in at least one hundred hours over the past two years into organizing this meeting.

Meanwhile, in early 2020, the coronavirus was raging in China and Italy, but there were only a few cases in the United States, mostly concentrated in Washington and California. Throughout January and February, President Trump was assuring the country that there was nothing to worry about; it was no worse than the flu; the virus would weaken when the weather turned warm; it was going to disappear; we had all the tests needed. No one was wearing masks. In fact, the Centers for Disease Control and Prevention was recommending that other than medical personnel, people should not wear masks because "they do not offer protection if not properly worn." On March 2, there were only two confirmed cases in Massachusetts, both infected from traveling abroad, and no deaths. Later it emerged that a number of people who had attended a Biogen leadership conference in Boston on February 27 had tested positive, but the extent of the infection was still not known.

Of course, we knew to take the pronouncements of President Trump with a grain of salt, but back then even leading government officials and scientists in Massachusetts were minimizing the risk. On March 4, Governor Charles Baker reiterated that the risk posed by the virus was low, a stance he would maintain for several more days. All indications were that the AMS meeting would go on as scheduled. On March 6, I placed an order for a lavish spread for the reception on the Saturday of the meeting. The American Mathematical Society was about to mail seventy boxes of books to Tufts for its book display during the meeting and we at Tufts made arrangements to receive and store them. By Monday, March 9, all preparations for the meeting were in place. A total of 415 participants had preregistered. Counting those who would register on site, we expected five hundred participants. However, since the coronavirus situation was fast developing, there was always a hint of uncertainty.

On March 10, when everyday life still felt normal, the Tufts administration, ever cautious, cancelled the meeting. This was even before the AMS had cancelled anything,

 $^{^{}st}We$ invite readers to submit letters to the editor at notices-letters <code>Qams.org</code>.

including the Virginia meeting scheduled for the coming weekend, and way before the lockdown ordered by the state. Initially, I felt a rush of disappointment—two years of work down the drain. The cancellation caused massive inconvenience for hundreds of participants, most of whom had by then bought plane tickets and booked hotels. Later that day, because the number of cases in Massachusetts had spiked from forty-one a day before to ninety-two, Gov. Baker declared a state of emergency. Of the ninety-two, a whopping seventy-seven were from the Biogen conference.

As time went on, the number of cases in Massachusetts exploded, from 2 on March 2 to 10,000 a month later and 100,000 two months later with 6,700 deaths. It was then I realized that Tufts had dodged a bullet. If the meeting had been scheduled for two weeks earlier, on March 7–8, it would certainly have taken place. With five hundred people from the four corners of the earth converging at Tufts, the meeting would certainly have become a superspreader event, worse than the Biogen meeting, which had only 175 participants. Many people would have become ill, and instead of being showcased, Tufts would live in infamy.

We were lucky that the meeting was scheduled for when it was, with just enough warning of a disaster to come for it to get cancelled.

—Loring W. Tu Professor of Mathematics Tufts University

BC vs. BCE

In "A Word From..." (in the August 2020 *Notices*), why did the editors allow dating Euclid's *Elements* to 300 BC (Before Christ) rather than to 300 BCE (Before the Common Era), given that BC promotes Christianity and thus discriminates against the roughly 30% of U.S. Citizens and 70% of the world's population that are not Christian?

—Charles H. Jones 3790 Onyx St. Eugene, OR 97405 chjones.bus@gmail.com

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